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Category Number and Subject: 5.6.2 DIII-D tokamak

[ ] Theory [X] Experiment

RWM Stabilization in DIII-D Using I-Coils With High Speed Actuators,* G.L. Jackson, A.G. Kellman, R.J. LaHaye, J.T. Scoville, E.J. Strait, *GA*, J.M. Bialek, A.M. Garofalo, O. Katsuro-Hopkins, G.A. Navratil, H. Reimerdes, *Columbia*, Y. In, *FarTech*, *Inc*. A. Nagy, M. Okabayashi, H. Takahashi, *PPPL*– A new prototype actuator system driving 12 internal coils (I-coils) was used to help stabilize resistive wall modes (RWMs) up to β_N~4. This approach is an alternative to rotational stabilization, which may not be adequate for fusion devices. VALEN modeling shows that as β_N approaches the ideal wall limit, higher bandwidth and lower system delay time are required to stabilize the larger RWM growth rates. This actuator system consists of 6 transistor amplifiers (dc-40 kHz), configured in 3 pairs, each driving 4 I-coils in an n=1 configuration. Initial experiments include the combination of I-coils for fast RWM stabilization and external C-coils with higher current capability for slower response dynamic error field correction. Effects of noise, maximum actuator current, and feedback system delay time on maximum achievable β_N will also be presented.

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[ ] Oral [X] Poster